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NOTE BY THE SECRETARY-GENERAL

The Secretary-General has the honour to transmit to the members of the Security Council the attached communication which he has received from the Director-General of the International Atomic Energy Agency (IAEA).

Annex

Letter dated 16 June 1993 from the Director-General of the International Atomic Energy Agency addressed to the Secretary-General

United Nations Security Council resolution 699 (1991), approved on 17 June 1991, requests - inter alia - the Secretary-General to submit to the Security Council progress reports on the implementation of the plan for the destruction, removal or rendering harmless of the items specified in paragraph 12 of resolution 687 (1991). Such reports are to be submitted every six months after the adoption of the resolution and the fourth report is therefore due on 17 June 1993.

Please find attached an outline of the activities carried out by the Agency during the past six months under the plan for the destruction, removal or rendering harmless, which you might find useful for the preparation of your report.

(Signed) Hans BLIX

Enclosure

Fourth semi-annual report (covering the period 17 December 1992 - 17 June 1993) on the implementation by the IAEA of the plan for the destruction, removal or rendering harmless of items listed in paragraph 12 of UN Security Council resolution 687 (1991)

INTRODUCTION

By resolution 699 of 17 June 1991, the Security Council approved the plan submitted by the International Atomic Energy Agency (IAEA), through the Secretary-General, for the destruction, removal or rendering harmless of all items listed in paragraph 12 of Security Council resolution 687 (1991). Resolution 699 also called for the Secretary-General to submit every six months a progress report on the implementation of the plan.

The first of these reports was circulated by the Secretary-General to the members of the Security Council in document S/23295 dated 17 December 1991, the second in document S/24110 dated 17 June 1992 and the third in document S/24988 dated 17 December 1992.

This is the fourth semi-annual report on the implementation by the IAEA of the plan for destruction, removal or rendering harmless covering the period from 17 December 1992 to 17 June 1993. During this period, the IAEA, with the assistance and cooperation of the Special Commission of the UN, conducted three on-site inspections in Iraq (IAEA-17, IAEA-18 and IAEA-19), detailed reports of which have been distributed to the Security Council[1].

PRESENT STATUS

As of 17 June 1993 the IAEA has carried out, with the assistance and cooperation of the Special Commission, 19 missions in Iraq. These missions have entailed inspections at seventy-five sites and have resulted in the gradual disclosure of a broadly-based nuclear programme

[1]Document S/25411 (IAEA-17) and document S/25666 (IAEA-18). The IAEA-19 report was sent to the UN Secretary-General for submission to the Security Council, on 10 June 1993.

aimed at the production of enriched uranium and at the development of nuclear weapon capabilities. As a result of these inspections, in the course of which the IAEA has interviewed numerous Iraqi authorities and secured thousands of pages of documents, the IAEA has been able to draw a reasonably coherent and consistent picture of Iraq's nuclear programme. However, doubts remain as to whether the picture is complete.

Efforts to implement the destruction, removal and rendering harmless of all items referred to in paragraph 12 of Security Council resolution 687 (1991) are on-going. The IAEA has supervised extensive destruction of facilities and equipment related to the production of enriched uranium and to the weaponization programme. Key buildings and equipment have been demolished by Iraqi personnel at the direction of the IAEA inspection teams, resulting in the destruction of the Al Atheer, Tarmiya and Ash Sharqat sites. All nuclear-related production facilities at Al Jezira and Al Qaim had been destroyed during the Gulf War and the Tuwaitha Centre was badly damaged. With regard to nuclear-weapons-usable material, the only such material currently known to remain in Iraq is the highly enriched uranium in irradiated reactor fuel assemblies, removal of which from Iraq awaits conclusion of the necessary arrangements with recipient countries. The material has been verified by non destructive measurements and is being kept under seal until its removal. In addition, numerous other materials, equipment and components have been either destroyed, removed from Iraq or placed under Agency seal in Iraq and are subjected to regular verification. The details of the activities relevant to destruction, removal or rendering harmless carried out since the third report submitted by the Director General are set out below.

Direct-Use Material

Fresh fuel

As indicated in the second and third reports, all of the fresh fuel for the IRT 5000 reactor has been transferred to Russia and transformed, through isotopic dilution, into uranium enriched to slightly less than 20% in U235. This material has been transferred from the processing plant to a storage facility in Russia, where it will remain under IAEA safeguards

pending its resale. The French-origin MTR type plates and the Russian-origin pins which were removed from Iraq in June 1992 remain in storage at the IAEA Laboratory in Seibersdorf, Austria.

Irradiated fuel

As indicated in the second and third reports, negotiations with a consortium of commercial companies from France and the UK for the removal, transportation and disposal of this fuel had met with difficulties of a legal, technical and financial nature. Therefore, the IAEA issued on 27 November 1992 a new request for proposals for the removal, transportation and disposal of the material in question. The request for proposal was sent to the Governments of China, France, the Russian Federation, the United Kingdom and the United States. By the closing date for the receipt of proposals, only one proposal from CIR-Minatom, an arm of the Russian Federation Ministry for Atomic Energy, had been received. This Russian offer included provision for the removal of the irradiated fuel from Iraq to Russia, reprocessing to recover and isotopically dilute the enriched uranium, and conditioning and permanent storage in Russia of the resulting wastes.

While the final price still remains to be negotiated, every measure has been taken by the Agency and the UN to limit the cost involved and to reduce uncertainties that might lead to cost overruns. Discussions have also been held with the Iraqi authorities to identify in every possible detail the extent of local support needed in Iraq in terms of manpower, equipment and services. Although technically feasible, in full compliance will all relevant safety standards, the packing and removal operations alone are already a major endeavor that will require not less than six months from its commencement until the last fuel element is removed from Iraq. During this time, contractor and Agency personnel will have to stay in Iraq to supervise and direct all operations. The reprocessing of the fuel and the conditioning and permanent storage of the resulting wastes will account for a significant portion of the cost of the contract. If sufficient funds are made available, the contract could be signed - and work could start - in a matter of weeks.

Plutonium and Other Nuclear Material

A primary and continuing objective of the IAEA inspections in Iraq is the verification of the correctness and completeness of Iraqi nuclear material declarations. The nuclear materials subject to safeguards inspection prior to the Gulf War are long since accounted for. None of the safeguarded enriched nuclear material had been diverted to the clandestine programme. With the exception of small quantities of natural uranium still to be recovered from waste at the Al Jezira site, all declared bulk uranium stock and intermediate process materials (a total of 550 t uranium) have been verified by chemical analysis and are maintained under seal at a single location. Most of this material, in the form of yellow cake, - about one-fifth declared after the Gulf War to have come from indigenous production and four-fifths from external sources - had not been included in the pre-war safeguards inspection regime.

It is not possible to establish the completeness of Iraqi nuclear material declarations through traditional material accountancy. Efforts to independently confirm quantities of nuclear material not subject to safeguards inspection (much of it in the form of yellow cake delivered to Iraq by external sources) have not been successful. Further, while daily production records for the Al Qaim facility (which produced such material indigenously) have been presented and reviewed by inspection teams, there is no way to verify the completeness of these records. Considerable effort has been expended in an attempt to develop an internally consistent picture of how quantities of nuclear material from the different origins had been utilized. This origin-based accountancy has been largely an effort to match inspection team-measured material, presented in various physical and chemical forms, with Iraqi descriptions of material flows through the declared processes. The matching of quantities of material with the respective origins is carried out through highly precise isotopic and impurity measurements. The resulting picture does not provide assurance that all nuclear materials have been declared and presented, but the resulting inconsistencies do provide a technical basis and direction for further investigation.

The Iraqi nuclear material flow chart changed considerably between the time it was first presented and the time that the "full, final and complete" declaration was submitted. The

various revisions in the nuclear material flow chart were made by the Iraqi side in response to inconsistencies identified by inspection teams. With the "full, final and complete" declaration of June 1992, the Iraqi response to remaining inconsistencies was that "any differences in weights existing in the chart of nuclear material as verified by the Agency are attributed to either losses of the material during the bombing or mixing of the material during the evacuation or the inaccuracy of the analysis of the samples". Iraqi authorities reported that they now considered that the "nuclear material file is closed" and have declined to provide further clarification. The Agency has consistently rejected this position.

An accumulation of sample analysis data from precise measurements of uranium isotopics and impurities in selected samples are now casting doubt on major elements of the Iraqi side's nuclear material declarations. The declarations in question involve the activities, identified as the "30 July Project", carried out in the building 73 complex at Tuwaitha and a large quantity of UO_2 reportedly imported from Brazil. A description of the specific declarations and the verification findings follows:

Declaration: Building 73a was involved in a variety of fuel fabrication activities utilizing 2,260 kgs of natural uranium (UO_2) from Italy (safeguarded material) and 59 kgs of natural uranium (UO_4) from Akashat/Al Qaim (non-safeguarded material). Thirty-seven air filters containing ~ 50 kg of natural uranium, currently stored under IAEA seal at Location C, were declared to have been installed in building 73a. In addition, waste associated with the activities of buildings 73a and 73b was presented to the IAEA for verification.

Verification Findings: The natural concentration of the uranium isotope U-234 is constant within a single uranium ore deposit, but highly variable across geographical separate ore bodies (see for example L.U. Joski, et al. J. Radioanal. Chem., 67 (1981) 47 and 79 (1983) 317). Figure 1 shows U-234/U-235 isotopic ratio measurements for 3 samples of the Italian UO_2, 3 samples of the Akashat/Al Qaim UO_4, samples from 8 of the 37 air filters declared to have been installed in building 73a and 2 samples of waste slurry identified with building 73a activities. The results shown in Figure 1, with further confirmation provided by the impurity analyses, contradict the Iraqi side's declaration that the bulk of the

material utilized in building 73a was of Italian origin. Either the filters had been installed elsewhere than declared (the Iraqi side has indicated that there was no filtration system in building 73c), or the activities carried out in building 73a involved extensive and undeclared utilization of material other than, or in addition to, the Italian UO_2. It is possible that the additional material processed in building 73a had been associated with the Iraqi uranium metallurgy programme and this could indicate a greater quantity of material involved in the violation of the safeguards agreement that was disclosed at the time of the eleventh mission.

Declaration: Iraq had received 23.5 tonnes of natural uranium as UO_2 from Brazil. A quantity amounting to 3.4 tonnes of that material had been processed for the enrichment programme. The remaining 20.1 tonnes, contained in 201 drums, was never processed.

Verification Findings: The total quantity of uranium verified as contained in the 201 drums is 18.2 tonnes, not the 20.1 tonnes declared. Moreover, when the randomly selected drums were opened for sampling, inspectors noted that material was present in three distinctly different physical forms:

- fine powder;
- granulated material; and
- a mixture of the granulated material and powder.

The Brazilian uranium originates from thorium bearing ores and, as such, should contain traces of thorium. Impurity analyses indicate that the granulated material contains significant amounts of thorium, while the fine powder contains no thorium. In fact, the broader analytical results suggest that the fine powder is Iraqi UO_2 produced at Al Jezira. During the eighteenth inspection, every one of the 201 drums was opened and the physical form of the material noted. An additional 16 samples were collected. Preliminary results suggest that at least two-thirds of the material presented as Brazilian UO_2 was of some other origin.

The verification data concerning the building 73a filters and the Brazilian UO_2 were discussed at length with the Iraqi authorities. They indicated that they could not dispute the results, but could offer no explanation either. They reiterated at length that all nuclear materials in Iraq had been declared and presented. The Iraqi responses to the IAEA's requests for clarifications were along the lines presented by Iraq in connection with the full, final and complete declaration, indicating that part of the material had been recovered under difficult circumstances and that some mixing had been unavoidable. This matter will be further pursued in future inspections.

Installations, equipment and other materials relevant to enriched uranium production and to weaponization activities

In accordance with paragraph 22 of the Agency's plan for future ongoing monitoring and verification of Iraq's compliance with paragraph 12 of part C of the Security Council resolution 687 (1991), contained in document S/22872/Rev. 1/Corr. 1, Iraq is obliged to declare to the IAEA items subject to the plan and to provide, inter alia, an inventory of all material, equipment and other items in Iraq identified in Annex 3 of the plan.

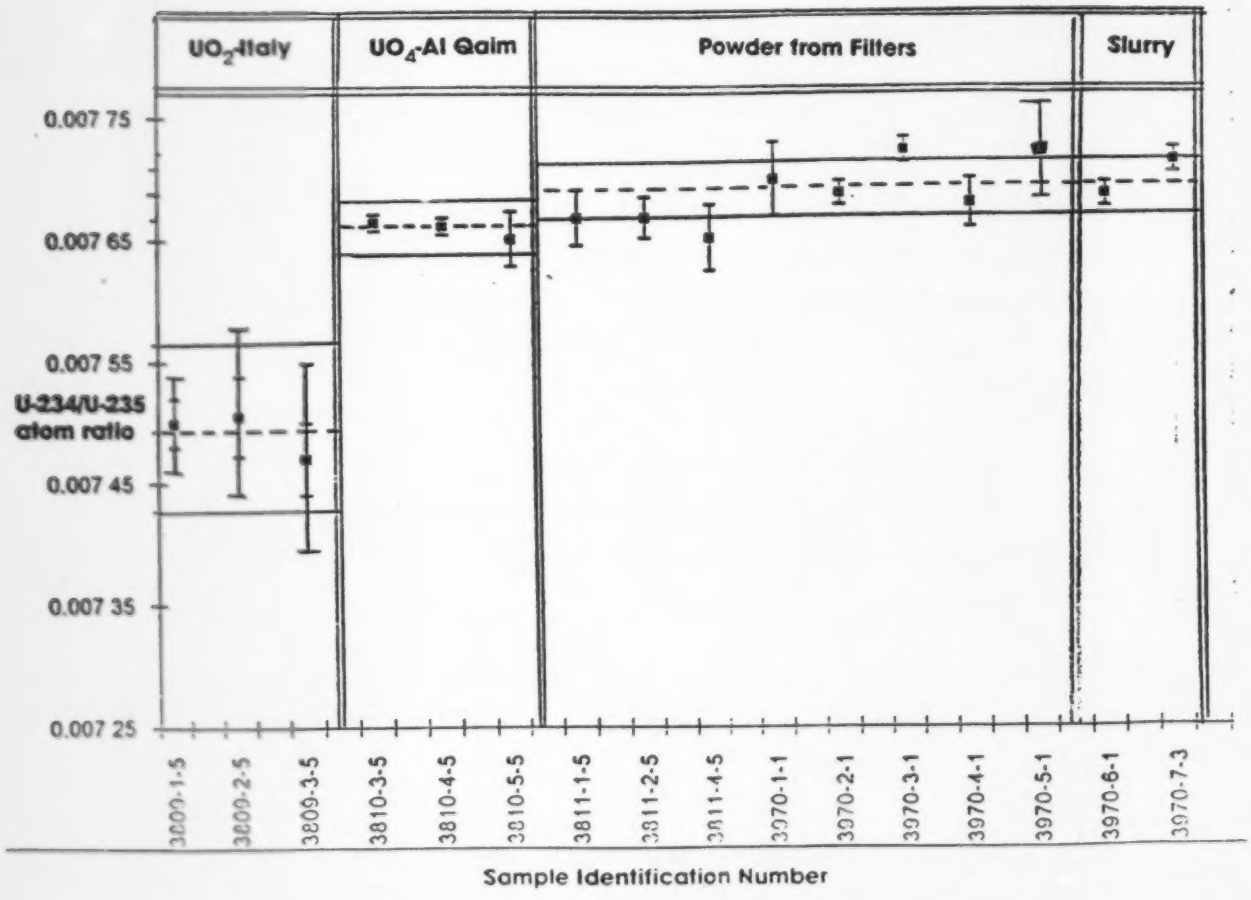
The items in the Annex include those specifically prohibited under resolution 687 (1991) i.e. those items which have to be destroyed, removed or rendered harmless, as well as others which may be prohibited, depending on their use or intended use, or subject to monitoring under the plan.

In document S/25621 of 19 April 1993, the Security Council was informed of the Agency's repeated efforts to obtain compliance by Iraq with the requirements of the plan's Annex 3 declaration.

At the end of the seventeenth inspection, the Iraqi authorities provided the IAEA team a revised list of Annex 3 items which Iraq described as covering the period from 1 January 1989 and including all Annex 3 items which existed or had existed in IAEC facilities, universities and State Establishments which supported the IAEC programme. However, the Iraqi

FIGURE 1

U-234/U-235 Isotopic Ratios for Materials Associated with Building 73a



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counterparts reserved the right to include items which might have been omitted from the list, either through oversight or because they were not thought to be covered by Annex 3, in the next update, which is to be submitted in July 1993.

Verification of the correctness and completeness of the new Annex 3 list, started in the course of the eighteenth and nineteenth inspections, will need still some time for completion. Details of this verification are described in the eighteenth inspection report (S/25666) and the nineteenth inspection report (submitted to the Security Council on 10 June 1993).

FUTURE ACTIONS

As indicated above, the removal from Iraq of a quantity of U235 contained in irradiated fuel elements remains one of the major outstanding actions. Priority should be given to concluding this action as promptly as possible.

Efforts to reconcile the major inconsistencies identified by the inspection teams in the nuclear material flow chart submitted by the Iraqi authorities, have not yet been successful. Discrepancies continue to exist between the Iraqi declarations and the IAEA's findings. This matter will be pursued in future inspections.

Following the January 1993 submission by Iraq of the revised Annex 3 list of the IAEA plan for future ongoing monitoring of Iraq's compliance with relevant Security Council resolutions, verification of the correctness and completeness of this list will continue.

As indicated in the IAEA's third semi-annual report on these activities (document S\25621), additional destruction, removal or rendering harmless may be necessary.